Remarks

Claims 1- 9 and 12 - 26 are pending. Favorable reconsideration is respectfully solicited. Applicants count some 29 separate rejections.

The present invention is directed to redispersible polymer powders which also contain a setting accelerant in non-combined form. Such compositions are added to hydraulically settable construction materials such as plasters, grouts, mortars, renders, and concrete, where they increase the flexibility and durability of these compositions due to the polymer content, and decrease the curing time due to the accelerant.

Setting accelerants such as tertiary alkanol amines have been added to polymer dispersions for use as construction material additives. However the high basicity of these compounds caused degradation of the polymer. A solution to this problem was to actually link the tertiary alkanolamines to the polymer backbone. However, this process renders the polymer synthesis complicated and therefore expensive. Applicants have found that setting accelerants can be provided in uncombined form, together with polymer, in the form of a redispersible polymer powder. In this form, the setting accelerant, preferably an alkanolamine, does not cause hydrolysis. Yet, because the accelerant is not bound to the polymer, polymer synthesis is simple, and the accelerant is readily available when mixed with the cementitious components, e.g. sand, cement, superplasticizers, water, etc. It was most surprising that such redispersible powders could be formed at all, since the setting accelerants are predominately low molecular weight liquids or waxy solids, and spray drying would be expected to form agglomerated or even wet powders which would then not be redispersible. However, that proved surprisingly not to be the case.

Claims 10 and 11 have been objected to for failing to limit a previous claim. The Office categorizes these claims as "use" claims, but that is incorrect. The claims are composition claims, each requiring additional components. However, to advance prosecution, these claims have been cancelled.

New claims 12 - 23 have been added. All these claims find full support in the specification, including the original claims as filed, and thus no issue of new matter arises by their addition. Claim 1 has been amended to recite that the setting accelerant is present in an amount of form 0.1 to 25 weight percent, and claim 6, which contained this limitation, has been amended to recite that the accelerant is present in an amount of from 1 to 10%, support provided on page 4, line 1. Claim 1 has also been amended to recite that the homo- and copolymers consist essentially of the recited monomers, optionally together with auxiliary monomers disclosed on pages 4 and 5. This language precludes monomers which would react with the setting accelerants and thus incorporate them into the polymer. As indicated in the specification, it is not desired to do so. Claim 12 accomplishes a similar result by restricting the monomers to those which do not react with the accelerants, as otherwise, again, the accelerant would be incorporated into the polymer.

Claims 1, 2, and 7 have been rejected under 35 U.S.C. § 112 ¶2. The two occurrences of "and/or" have been replaced by equivalent, but more cumbersome language. "Immediately", of course means "just before", but has been replaced by the phrase "after completion of polymerization and". The Office should note the purpose of addition just before spray drying, as indicated on page 11, last paragraph, to minimize polymer hydrolysis.

Claims 1 - 11 had been rejected over the foreign references cited in the European Search Report, and cited in Applicants' Supplemental Information Disclosure Statement of March 3, 2004. The basis for the 35 U.S.C. § 102(b) rejection is stated to be for the same reasons as the "conclusions of the European Search Report". In Europe, the claims have been amended in much the same manner as in the present case, and the claims have now been granted. Applicants thus solicit the withdrawal of the rejection under the rationale of the European Examiner, as it has been overcome. It is noted that there was no rejection in Europe for lack of invention, *i.e.* obviousness. Applicants also note that the claims (paragraph 8) have been rejected over 4 references which are the English language equivalents of 4 of the references cited in the rejection of paragraphs 6 and 7 of the Office Action.

Claims 1 - 4 and 8 - 11 (now 8 - 9) have been rejected under 35 U.S.C. § 102(b), (paragraphs 8, 9 of the Office Action), and under § 103 over the same references (paragraphs 14, 15 of the Office Action). It is noted that there is a double inclusion of numerous references, since the foreign language and English language versions are both cited. Applicant's remarks will focus on the English versions, and these comments are fully to be considered as applying to the foreign language equivalents. If the Office believes that the foreign language publications contains any additional disclosure as compared to their English language counterparts, the Office is requested to submit an English language translation of the foreign reference so that Applicant's attorney can be made aware of any differences.

Koelliker et al. U.S. 5,959,029 ("*Koelliker*") (EP-A-0 723 975) discloses polymer dispersions containing epoxide monomers which may be used as cement additives. Applicant's claims preclude the use of epoxide monomers, which would react with setting accelerants, and since *Koelliker* requires such monomers, the claims are both novel and non-obvious over *Koelliker*. Moreover, *Koelliker* is not directed to redispersible powder compositions containing an accelerant. *Koelliker* makes no mention of setting accelerants in his specification. The Office states that *Koelliker* discloses ethoxylated alkylamines in column 4, but such are not within the scope of the invention. Ethoxylated amines are surfactants, not setting accelerants. The Office also cites use of triethanol amine in column 7, but triethanol amine in this portion of the disclosure is a chain transfer agent (molecular weight regulator), which participates in the polymerization and becomes incorporated into the polymer as a result. The claims are clearly both novel and non-obvious over *Koelliker*.

Ball U.S. 6,063,865 ("*Ball*") (EP-A-0894822) discloses crosslinkable powder compositions which are prepared from polymers having aldehyde, keto, epoxide, isocyanate, anhydride, or aziridine groups, and a crosslinker which may be an amine, hydrazide, or hydroxylamine. The problem solved by *Ball* is avoidance of premature crosslinking. Applicant's do not desire any crosslinking, whether premature or not, and the claims do not allow the polymers to have aldehyde, keto, epoxide, isocyanate, anhydride, or aziridine groups. It is the purpose of Applicant's invention to have the setting accelerants available to the cementitious composition, and thus the polymers do not contain reactive groups which can react with the accelerants. No crosslinking through the accelerant will occur. The claims are thus both novel and non-obvious over *Ball*.

Guerin et al. U.S 6,369,153 (*"Guerin"*) (WO 97/15617 A) discloses redispersible polymers employing a special surfactant mixture comprising an amphoteric surfactant. Contrary to the assertion of the Examiner, the nitrogen compounds of claim 1 of *Guerin* and the formula in column 5 do not include any compounds within the scope of Applicant's claims. These compounds of *Guerin* are amphoteric surfactants, *i.e.* surfactants which contain both basic and acidic groups in the same molecule. The other surfactant is very unique, with an isotropic fluid phase ≤ 25°C, and a hexagonal or cubic liquid crystal phase at higher temperatures. *Guerin* makes no mention of any setting accelerant. It is clear that the compositions of *Guerin* are far different from those of Applicant, and neither anticipate Applicant's compositions or render them obvious.

Claims 1 - 4 and 6 - 11 (now 6 - 9) have been rejected under 35 U.S.C. § 102(b or e) over Craig U.S. 4,670,505 ("*Craig*"), Saur U.S. 5,703,156 ("*Saur*"), Thanes 6,001,913 ("*Thanes*"), Pakesch et al. 6,028,167 ("*Pakesch*"), or Dreher et al. 6,716,922 ("*Dreher*"). In a later paragraph of the Office Action, the claims have been rejected under 35 U.S.C. § 103(a) over these references or the foregoing references, all individually, as well. The remarks presented above and below address both the § 102 and § 103 rejections.

Craig discloses aqueous polyacrylate dispersions which are stabilized with aminoalcohol. The Office indicates that if these dispersions were spray dried, they would yield Applicant's powder. This might be true for some of Applicant's claims, *i.e.* those which allow for polyacrylates and aminoalcohols, but most importantly, *Craig* does not teach or suggest drying such aqueous emulsions. The entire thrust of *Craig* is to provide acrylic lattices of improved stability, for use, *e.g.* as latex paints. If the polymers were to be spray dried, there would be no need to add the aminoalcohols, as it is only the aqueous latex which needs stabilizing. The claims are novel and non-obvious over *Craig*.

Sauer describes redispersible powders which may be prepared using a chain transfer agent (molecular weight regulator) to lower the polymer molecular weight. However, such molecular weight regulators become incorporated into the polymer, and thus are not free in the composition as they are in Applicant's compositions, where they are added just prior to spray drying. The claims are neither anticipated nor rendered obvious by *Sauer*.

Thames discloses internally plasticized latex polymers which include very special long chain alkenol (unsaturated alcohol) esters which also contain unsaturation in the esterifying acid. Applicant's polymers contain no such monomers. *Thames* does not mention setting accelerants, and the only mention of triethanolamine and like compounds are as pH buffers, along with other pH buffers. All the examples employ sodium carbonate or sodium hydrogen carbonates as buffers. *Thames* briefly mentions that his polymers can be dried, but does not direct the skilled artisan to Applicant's polymers (even not considering the very unusual plasticizing monomer), out of all the myriad of combinations and permutations disclosed. The claims are novel and non-obvious over *Thames*.

Pakusch discloses use of phenolsulfonic acid-formaldehyde condensates as drying assistants in the drying of aqueous polymer dispersions. In column 3, *Pakusch* indicates that these acid condensates can be neutralized by a basic metal salt or amine. In the examples, only basic metal salts (calcium hydroxide) are used. Applicant's claims do not recite merely any amine, and *Pakusch* gives no example of a single amine. All Applicant's amines of the formula NR_3, and $R_2N\text{-}(CH_2)_n\text{-}NR_2$ contain at least one alkanol group, which *Pakusch* does not disclose, and *Pakusch* discloses no NH_2-terminated polyalkylene glycols. *Pakusch* does not mention setting accelerants and clearly does not direct the skilled artisan to the present invention. The claims are novel and non-obvious over *Pakusch*.

Dreher discloses dispersions prepared from two distinct polymers, a water insoluble polymer, and a water soluble polymer with very high carboxylic acid group content, and at least one amine containing a hydroxyl group. The polymers of *Dreher* are very unlike those of Applicant's due to their content of polymer A2. Moreover, the alkanol amines employed by *Dreher* are for the purpose of crosslinking the polymers at elevated temperatures: the compositions are designed as replacements for phenol/formaldehyde condensates in the manufacture of bound particulates such as particle board and fiberboard. The claims are clearly novel and non-obvious over *Dreher*.

The claims have been rejected for obviousness-type double patenting over claim 1 of copending U.S. application 10/463,165. Applicant respectfully traverses this rejection. The subject matter of the 10/463,165 application, which is commonly assigned, is to hydrophobic-modified redispersion polymers whose hydrophobic properties, when added to construction materials such as cements, mortars, etc., are enhanced by the presence of specific fatty compounds. The '165 application is not directed to incorporating setting accelerants into redispersible polymer powder cement additive compositions. Nor are any nitrogen-containing compounds such as those accelerants claimed in the present application, disclosed in '165. Perhaps the Office has been mislead by the sentence structure of the latter application. For example, the mention of "mono-, di-, or triethanolamine" in the abstract, in column 2 [0012], and in claim 1, does not refer to these compounds in uncombined form. Rather, the disclosure is to "the group of fatty acids having from 8 to 22 carbon atoms . . . and their esters with . . . mono-, di-, or triethanolamine . . . ." Thus, what are disclosed are fatty acid esters of alkanolamines, not alkanolamines themselves. Thus, not only is there no overlap in the claims, there is no issue of obviousness either, as the '165 application does not teach or suggest adding any accelerant to its polymer compositions. Withdrawal of the obviousness-type double patenting rejection is solicited.

Applicant believes that the description of the invention herein, the amendments to the claims, and the description of the prior art and the differences between the claimed invention are such to place the application in condition for allowance. If not, Applicant respectfully requests the Office to carefully consider which claims still remain rejected and over which references, in view of the exceptionally large number of rejections set forth in the Office Action, and to set forth any remaining rejections with particularity in order to advance the prosecution of the application. A copy of the claims of the allowed European application, EP 1 420 001B1 are attached.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Respectfully submitted,

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Attachments: claims of EP 1 420 001B1